Small Business Innovation Research/Small Business Tech Transfer

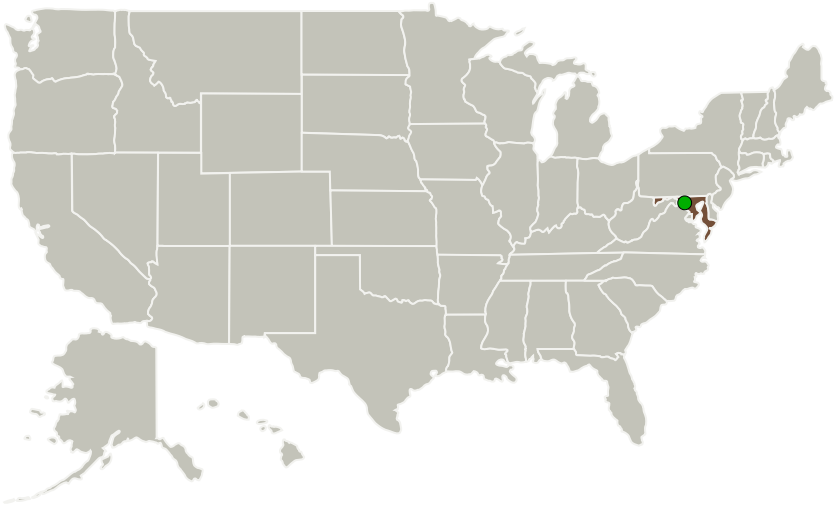
Innovative Non-Contact Metrology Solutions for Large Optical Telescopes, Phase I

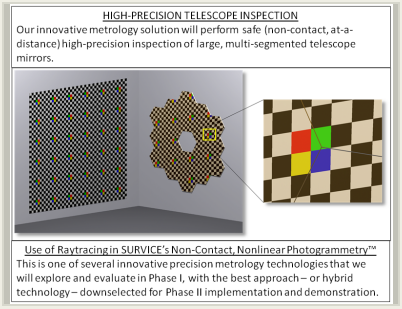
Completed Technology Project (2014 - 2014)

Project Introduction

NASA has unique non-contact precision metrology requirements for dimensionally inspecting the global position and orientation of large and highly-polished multi-segmented mirrors (in an as-installed configuration), such as those used on the James Webb Space Telescope. SURVICE Metrology has assembled a world-class team of metrologists and optical physicists to identify and develop innovative approaches to accurately inspect the positional accuracy of mirror segments using non-contact methods. In addition to our in-house staff of experts in metrology and optics, our team includes industry-recognized academic experts in metrology. What is needed is the ability to accurately measure the global position and orientation of mirror segments in an as-installed configuration using non-contact means from a safe distance to allow measurements to be made with minimal risk to the asset. SURVICE proposes to research and evaluate technologies under the Phase I effort with respect to feasibility, cost, and risk and downselect to the best candidate technology for development in a Phase II effort. SURVICE brings demonstrated metrology systems integration success that we will apply to the subject NASA challenge. We have multiple Phase II and Phase III success stories, have delivered custom metrology solutions.

Primary U.S. Work Locations and Key Partners





INNOVATIVE NON-CONTACT METROLOGY SOLUTIONS FOR LARGE OPTICAL TELESCOPES Project Image

Table of Contents

Small Business Innovation Research/Small Business Tech Transfer

Innovative Non-Contact Metrology Solutions for Large Optical Telescopes, Phase I

Completed Technology Project (2014 - 2014)

Organizations Performing Work	Role	Type	Location
SURVICE Engineering Company, LLC	Lead Organization	Industry	Belcamp, Maryland
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations
Maryland

Project Transitions

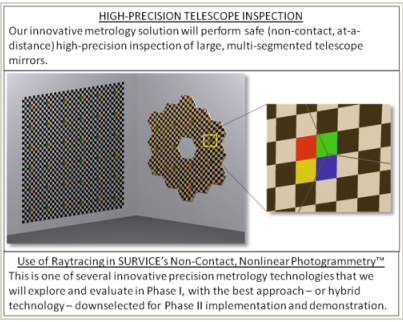
June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140744)*

Images



Project Image
INNOVATIVE NON-CONTACT METROLOGY SOLUTIONS FOR LARGE OPTICAL TELESCOPES Project Image
(https://techport.nasa.gov/image/136718)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

SURVICE Engineering Company, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

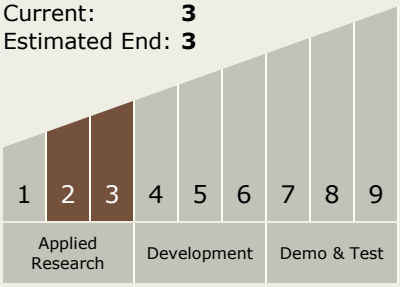
Carlos Torrez

Principal Investigator:

John Ebersole

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



Innovative Non-Contact Metrology Solutions for Large Optical Telescopes, Phase I

Completed Technology Project (2014 - 2014)

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.4 Manufacturing
    - TX12.4.3 Electronics and Optics Manufacturing Process

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System